

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

ENGSTRAND et al.

Atty. Ref.: 2483-33

Serial No.

Group:

Filed: May 29, 2001

Examiner:

For: QUEUE MANAGEMENT IN PACKET SWITCHED NETWORKS

May 29, 2001

Assistant Commissioner for Patents
Washington, DC 20231

PRELIMINARY AMENDMENT

Sir:

Prior to examination on the merits, please amend the above-identified application as follows:

IN THE CLAIMS:

Please cancel claims 1-14 and add new claims 15-28 as follows:

-- 15. (New) Method for use in a first node of a communication network for managing the transfer of information in packets across a channel from a second node, comprising:

holding a queue record representing the number of packets awaiting transmission at said second node,

updating said queue record upon receipt of a queue size value from said second node, and

recording the issue of permits allocating time slots on said channel destined for said second node for a predetermined time period after the issue of each permit and adjusting any queue size value received from said second node by the number of recorded permits prior to updating said queue record.

16. (New) Method as claimed in claim 15, wherein the time period is a predetermined time period.

17. (New) Method as claimed in claim 15, wherein the time period is equivalent to the round-trip transmission delay between said first and second nodes.

18. (New) Method as claimed in claim 15, wherein the time period is equivalent to the delay between the first node sending a permit and the second node receiving said permit plus the delay between the second node sending a packet in response to the permit and the first node receiving said packet.

19. (New) Method as claimed in claim 18, wherein the delay includes a processing delay for the second node and for said first node.

20. (New) Method as claimed in claim 15, further comprising:

sending at least one permit when said recorded queue size is greater than zero.

21. (New) Use of the method in claim 15 in a central node of a point-to-multipoint communication network.

22. (New) A node of a communication network adapted to receive information in packets from at least one further node, comprising memory means for storing a queue record representing the number of packets awaiting transmission at said at least one further node, and processing circuitry for updating said queue record upon receipt of a queue size value from said at least one further node and for recording the issue of permits to said at least one further node for a predetermined time period, wherein each permit enables the transfer of at least one packet of information, and for adjusting any incoming queue size value received from said at least one further node on the basis of said recorded permit value.

23. (New) A node as claimed in claim 22, wherein the processing circuitry is arranged to utilize an adjusted queue size value.

24. (New) A node as claimed in claim 22, wherein the delay is equivalent to the round trip delay between said node and said further node.

25. (New) A node as claimed in claim 22, wherein the delay is equivalent to the sum of the time period between transmission of a permit and receipt of said permit by the further node and the time period between transmission of a packet of information by said further node in response to said permit and receipt of said packet by the node.

26. (New) A communication network comprising:

a central node and several multipoint nodes, the multipoint nodes being connected to said central node by a shared medium, said central node including means for storing queue size records representing the number of packets awaiting transmission at each of said multipoint nodes,

means for updating each of said queue records upon receipt of a queue size value from a respective one of said multipoint nodes; and

means for recording the issue of permits enabling the transfer of at least one packet of information to each of said multipoint nodes for a predetermined delay, and for adjusting any incoming queue size value received from said multipoint nodes on the basis of a respective recorded permit value.

27. (New) A network as claimed in claim 26, wherein said means for updating queue records is arranged to utilize an adjusted corresponding queue size value.

28. (New) A network as claimed in claim 27, wherein said delay is equivalent to the sum of the time period between transmission of a permit and receipt of said permit by the corresponding multipoint node and the delay between the transmission of a packet by said multipoint node and receipt of said packet by said central node.

REMARKS

By the foregoing amendment, Applicants have cancelled claims 1-14 and added new claims 15-28.

THE UNIVERSITY OF CHICAGO

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please cancel claims 1-14 and add new claims 15-28 as follows:

-- 15. (New) Method for use in a first node of a communication network for managing the transfer of information in packets across a channel from a second node, comprising:

holding a queue record representing the number of packets awaiting transmission at said second node,

updating said queue record upon receipt of a queue size value from said second node, and

recording the issue of permits allocating time slots on said channel destined for said second node for a predetermined time period after the issue of each permit and adjusting any queue size value received from said second node by the number of recorded permits prior to updating said queue record.

16. (New) Method as claimed in claim 15, wherein the time period is a predetermined time period.

17. (New) Method as claimed in claim 15, wherein the time period is equivalent to the round-trip transmission delay between said first and second nodes.

18. (New) Method as claimed in claim 15, wherein the time period is equivalent to the delay between the first node sending a permit and the second node receiving said permit plus the delay between the second node sending a packet in response to the permit and the first node receiving said packet.

19. (New) Method as claimed in claim 18, wherein the delay includes a processing delay for the second node and for said first node.

20. (New) Method as claimed in claim 15, further comprising:

sending at least one permit when said recorded queue size is greater than zero.

21. (New) Use of the method in claim 15 in a central node of a point-to-multipoint communication network.

22. (New) A node of a communication network adapted to receive information in packets from at least one further node, comprising memory means for storing a queue record representing the number of packets awaiting transmission at said at least one further node, and processing circuitry for updating said queue record upon receipt of a queue size value from said at least one further node and for recording the issue of permits to said at least one further node for a predetermined time period, wherein each permit enables the transfer of at least one packet of information, and for adjusting any incoming queue size value received from said at least one further node on the basis of said recorded permit value.

23. (New) A node as claimed in claim 22, wherein the processing circuitry is arranged to utilize an adjusted queue size value.

24. (New) A node as claimed in claim 22, wherein the delay is equivalent to the round trip delay between said node and said further node.

25. (New) A node as claimed in claim 22, wherein the delay is equivalent to the sum of the time period between transmission of a permit and receipt of said permit by the further node and the time period between transmission of a packet of information by said further node in response to said permit and receipt of said packet by the node.

26. (New) A communication network comprising:

a central node and several multipoint nodes, the multipoint nodes being connected to said central node by a shared medium, said central node including means for storing queue size records representing the number of packets awaiting transmission at each of said multipoint nodes,

means for updating each of said queue records upon receipt of a queue size value from a respective one of said multipoint nodes; and

means for recording the issue of permits enabling the transfer of at least one packet of information to each of said multipoint nodes for a predetermined delay, and for adjusting any incoming queue size value received from said multipoint nodes on the basis of a respective recorded permit value.

27. (New) A network as claimed in claim 26, wherein said means for updating queue records is arranged to utilize an adjusted corresponding queue size value.

28. (New) A network as claimed in claim 27, wherein said delay is equivalent to the sum of the time period between transmission of a permit and receipt of said permit by the corresponding multipoint node and the delay between the transmission of a packet by said multipoint node and receipt of said packet by said central node. --